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## C-A OPERATIONS PROCEDURES MANUAL

### **ATTACHMENT**

4.120.8.i 8 O'Clock (PEER 17) PHENIX Gas Detection Tests

	C-A-OI	PM Procedures in	which this Attachmen	t is used.	
	4.120.8				
L		Hand Proc	cessed Changes		
	HPC No.	<u>Date</u>	Page Nos.	<u>Initials</u>	
7. Castillo					
. Castillo		Approved:	Signature on Fi er-Accelerator Departr	le	
		Comae	er-Accelerator Departr	nem Chairman	D

# 4.120.8.i 8 O'Clock (PEER 17) PHENIX Gas Detection Tests

## PASS ANNUAL ACCEPTANCE TEST PROTOCOL

Division A Software Filename and Checksum: Title:	Checksum:
Division B Software Filename and Checksum: Title:	Checksum:
Initial testing complete:	
Test Team Leader's Name (Print):	Life Number:
Test Team Leader's Name (Sign):	Date://
Acceptance test procedure complete (following repairs and retesting if required):	
Test Team Leader's Name (Print):	Life Number:
Test Team Leader's Name (Sign):	Date://
Test results reviewed by:	
Safety Section Head's Name (Print):	Life Number:
Safety Section Head's Name (Sign):	Date://
Test results accepted by Radiation Safety Committee:	
RSC Member's Name (Print):	Life Number:
RSC Member's Name (Sign):	Date:/

#### Current Source Test of PHENIX North Gas Detector, 8XGS1, in Mode 8 **CONN** Voltmeter to Div A: Mod 11 Input 0, 1008B **CONN** Voltmeter to Div B: Mod 6 Input 1, 1008B **CONN** Current Srce to Tp 3(+), Tp 4(-) 8XGS1 pcb in Div A cab 1008B Peer 17 in Mode 8 **PLACE** □ VERIFY Peer 17 is in Restricted Access MODE 8 RAISE Current value (~ 1.7 mA) for Level 1 response at MCR □ VERIFY Response at MCR is LEVEL 1 **RECORD** Current value \_ mA $\sim 1.4\overline{V}$ Div A vltg: V Div B vltg: V RECORD Current value (~ 2.5 mA) for Level 2 response at MCR RAISE Response at MCR is □ VERIFY LEVEL 2 Current value **RECORD** $\sim 1.6\overline{\text{V}}$ RECORD Div A vltg: V Div B vltg: V **RAISE** Current value (~ 4.1mA) for Alarm response at MCR Response at MCR is □ VERIFY **ALARM** RECORD Current value mA RECORD Div A vltg: \_\_\_\_\_ V Div B vltg: \_\_\_\_ V $\sim 2.0V$ Fan 8XEF1 is □ VERIFY ON Fan 8XSF1 is □ VERIFY ON □ VERIFY Evac & Exp alarm ON □ VERIFY Peer 17 is in Safe Mode MODE 2 LOWER Current value for $\sim 1.6~V$ output for Div A & B Attempt to reset Alarm at MCR **FAIL** □ VERIFY **LOWER** Current value for ~ 1.4 V output for Div A & B Attempt to reset Alarm at MCR **SUCCESSFUL** □ VERIFY □ VERIFY Fan 8XEF1 is **OFF** □ VERIFY Fan 8XSF1 is **OFF** □ VERIFY Evac & Exp alarm **OFF** Current value for ~ 1.0 V output for Div A & B LOWER Alarm at MCR RESET

☐ Check acceptance of Current Source test of PHENIX North Gas detector, 8XGS1, in Mode 8

MCR sees 8XGS1 as

□ VERIFY

1.1

**SAFE** 

1.2	Current Source Test of North Gas Detector 8XGS1 in PHENIX in Mode 17				
	PLACE VERIFY	Peer 17 in Mode 17 Peer 17 is in Restricted Access	MODE 17		
	RAISE VERIFY RECORD RECORD	Current value (~ 4.1mA) for Alarm Response at MCR Response at MCR is Current value Div A vltg: V Div B vltg: V	ALARM  - 2.0V mA		
	VERIFY VERIFY VERIFY VERIFY	Fan 8XEF1 is Fan 8XSF1 is Evac & Exp alarm Peer 17 is in Safe Mode	ON ON ON MODE 2		
	LOWER	Current value for $\sim 1.0~V$ output for Div A & B			
	VERIFY VERIFY VERIFY	Fan 8XEF1 is Fan 8XSF1 is Evac & Exp alarm	OFF OFF OFF		
	RESET VERIFY	Alarm at MCR MCR sees 8XGS1 as	SAFE		
1.3	-	otance of Current Source test of North Gas detector 8XGS1 in Pl ce Test of North Gas Detector 8XGS1 in PHENIX in Mode 16 Peer 17 in Mode 16 Peer 17 is in Controlled Access	MODE 16		
			MODE 16  ALARM		
	RECORD RECORD	Current value Div <b>A</b> vltg: V Div <b>B</b> vltg: V	${\sim 2.0 \mathrm{V}} \mathrm{mA}$		
	VERIFY VERIFY VERIFY VERIFY	Fan 8XEF1 is Fan 8XSF1 is Evac & Exp alarm Peer 17 is in Safe Mode	ON ON ON MODE 2		
	LOWER	Current value for $\sim 1.0~V$ output for Div $A~\&~B$			
	VERIFY VERIFY VERIFY	Fan 8XEF1 is Fan 8XSF1 is Evac & Exp alarm	OFF OFF OFF		
	RESET VERIFY	Alarm at MCR MCR sees 8XGS1 as	SAFE		

<sup>☐</sup> Check for test acceptance of Current Source test of North Gas detector 8XGS1 in PHENIX in Mode 16

1.4	Current Source Test of North Gas Detector 8XGS1 in PHENIX in Mode 2				
		PLACE	Peer 17 in Mode 17		
		VERIFY	Peer 17 is in Safe Access	MODE 2	
		RAISE	Current value (~ 4.1mA) for Alarm Response at MCR		
		VERIFY	Response at MCR is	ALARM	
		RECORD	Current value	mA	
		RECORD	Div A vltg: V Div B vltg: V	~ 2.0V	
		VERIFY	Fan 8XEF1 is	ON	
		VERIFY	Fan 8XSF1 is	ON	
		VERIFY	Evac & Exp alarm	ON	
		VERIFY	Peer 17 remains in Safe Mode	MODE 2	
		LOWER	Current value for $\sim 1.0~V$ output for Div $A~\&~B$		
		VERIFY	Fan <b>8XEF1</b> is	OFF	
		VERIFY	Fan 8XSF1 is	OFF	
		VERIFY	Evac & Exp alarm	OFF	
		RESET	Alarm at MCR		
		VERIFY	MCR sees 8XGS1 is	SAFE	
1.5	C	urrent Sourc	e Test of PHENIX North Gas Detector, 8XGS1, in Mode 24	and Bad Sensor check	
		PLACE	Peer 17 in Mode 24		
		VERIFY	Peer 17 is in No Access	MODE 24	
		RAISE	Current value (~ 4.1mA) for Alarm Response at MCR		
		VERIFY	Response at MCR is	ALARM	
		RECORD	Current value	mA	
		RECORD	Div A vltg: V Div B vltg: V	~ 2.0V	
		VERIFY	Fan <b>8XEF1</b> is	ON	
		VERIFY	Fan 8XSF1 is	ON	
		VERIFY	Evac & Exp alarm	ON	
		VERIFY	Peer 17 remains in No Access	MODE 24	
		LOWER	Current value for $\sim 1.0~V$ output for Div $A~\&~B$		
		VERIFY	Fan 8XEF1 is	OFF	
		VERIFY	Fan <b>8XSF1</b> is	OFF	
		VERIFY	Evac & Exp alarm	OFF	
		RESET	Alarm at MCR		
	П	VERIFY	MCR sees 8XGS1 as	SAFE	

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		REVERSE	Current Source connections	
		RAISE VERIFY RECORD RECORD	Current value (~ 1.1 mA) for <b>Bad Sensor</b> response at <b>MCR</b> Response at <b>MCR</b> is Current value Div <b>A</b> vltg: V Div <b>B</b> vltg: V	BAD SENSOR  mA  ~0.725V
		VERIFY	Evac & Exp alarm	ON
		RAISE RECORD RECORD	Current value ( $\sim 0$ mA) for $\sim 1V$ output Current value Div A vltg: V Div B vltg: V	${\sim 1.0 V}$ mA
		VERIFY	Evac & Exp alarm	OFF
		RESET VERIFY	Bad Sensor at MCR MCR sees 8XGS1 is	SAFE
		Check for acc and Bad Senso	eptance of Current Source test of PHENIX North Gas detector 8XGS: or check	l in Mode 24
1.6	(	Gas Activation	n test of PHENIX North Gas Detector, 8XGS1, in Mode 8	
		PLACE VERIFY	Peer 17 in Mode 8 Peer 17 is in Restricted Access	MODE 8
		DISCONN VERIFY SPRAY RECORD	Current Source Current Source is 50% L.E.L. gas on 8XGS1 (~2 mins reaction) Trip Level: Div A vltg: V Div B vltg: V	DISCONNECTED
		VERIFY VERIFY VERIFY	Fan 8XEF1 is Fan 8XSF1 is Evac & Exp alarm MCR sees Peer 17 is in Safe Mode	ON ON ON MODE 2
		ALLOW RECORD	50% L.E.L. gas dissipation (~ 2 mins)  Quiescent Vltg: Div A vltg: V Div B vltg: V	
		VERIFY VERIFY VERIFY	Fan 8XEF1 is Fan 8XSF1 is Evac & Exp alarm	OFF OFF OFF
		RESET	Alarm at MCR	
		VERIFY DISCONN	MCR sees 8XGS1 as Voltmeter	SAFE
	Ch	eck for accept	ance of Gas Activation test of PHENIX North Gas detector 8XGS1 in	ı Mode 8

#### Current Source Test of PHENIX Central Gas Detector, 8XGS2, in Mode 8 **CONN** Voltmeter to Div A: Mod 11 Input 3, 1008B **CONN** Voltmeter to Div B: Mod 6 Input 2, 1008B **CONN** Current Srce to Tp 3(+), Tp 4(-) 8XGS2 pcb in Div B cab 1008B Peer 17 in Mode 8 **PLACE** □ VERIFY Peer 17 is in Restricted Access MODE 8 RAISE Current value (~ 1.7 mA) for Level 1 response at MCR □ VERIFY Response at MCR is LEVEL 1 **RECORD** Current value \_ mA $\sim 1.4\overline{V}$ Div A vltg: V Div B vltg: V RECORD Current value (~ 2.5 mA) for Level 2 response at MCR RAISE Response at MCR is □ VERIFY LEVEL 2 Current value **RECORD** $\sim 1.6\overline{\mathrm{V}}$ RECORD Div A vltg: V Div B vltg: V RAISE Current value (~ 4.1mA) for Alarm response at MCR Response at MCR is □ VERIFY **ALARM** RECORD Current value mA RECORD Div A vltg: \_\_\_\_\_ V Div B vltg: \_\_\_\_ V $\sim 2.0V$ Fan 8XEF1 is □ VERIFY ON Fan 8XSF1 is □ VERIFY ON □ VERIFY Evac & Exp alarm ON □ VERIFY Peer 17 is in Safe Mode MODE 2 LOWER Current value for $\sim 1.6~V$ output for Div A & B Attempt to reset Alarm at MCR **FAIL** □ VERIFY **LOWER** Current value for ~ 1.4 V output for Div A & B Attempt to reset Alarm at MCR **SUCCESSFUL** □ VERIFY □ VERIFY Fan 8XEF1 is **OFF** □ VERIFY Fan 8XSF1 is **OFF** □ VERIFY Evac & Exp alarm **OFF** Current value for ~ 1.0 V output for Div A & B LOWER Alarm at MCR RESET □ VERIFY MCR sees 8XGS2 as **SAFE**

<sup>☐</sup> Check acceptance of Current Source test of PHENIX Central Gas detector, 8XGS2, in Mode 8

		PLACE VERIFY	Peer 17 in Mode 17 Peer 17 is in Restricted Access	MODE 17
	ш	V EIGHT 1	Teel 17 to in resolution recess	WODE IT
		RAISE	Current value (~ 4.1mA) for Alarm Response at MCR	AT ADM
		VERIFY RECORD	Response at MCR is Current value	ALARM mA
		RECORD	Div A vltg: V Div B vltg: V	~ 2.0V
		VERIFY	Fan <b>8XEF1</b> is	ON
		VERIFY	Fan 8XSF1 is	ON
		VERIFY	Evac & Exp alarm	ON
		VERIFY	Peer 17 is in Safe Mode	MODE 2
		LOWER	Current value for $\sim 1.0~V$ output for Div $A~\&~B$	
		VERIFY	Fan 8XEF1 is	OFF
		VERIFY	Fan 8XSF1 is	OFF
		VERIFY	Evac & Exp alarm	OFF
		RESET	Alarm at MCR	
		VERIFY	MCR sees 8XGS2 as	SAFE
1.9		Current Sour	ce Test of Central Gas Detector 8XGS2 in PHENIX in Mode	16
	П	PLACE VERIEV	Peer 17 in Mode 16 Peer 17 is in Controlled Access	MODE 16
		PLACE VERIFY	Peer 17 in Mode 16 Peer 17 is in Controlled Access	MODE 16
		VERIFY RAISE	Peer 17 is in Controlled Access  Current value (~ 4.1mA) for Alarm Response at MCR	
		VERIFY RAISE VERIFY	Peer 17 is in Controlled Access  Current value (~ 4.1mA) for Alarm Response at MCR  Response at MCR is	ALARM
		VERIFY RAISE VERIFY RECORD	Peer 17 is in Controlled Access  Current value (~ 4.1mA) for Alarm Response at MCR  Response at MCR is  Current value	ALARM mA
		VERIFY RAISE VERIFY RECORD RECORD	Peer 17 is in Controlled Access  Current value (~ 4.1mA) for Alarm Response at MCR  Response at MCR is  Current value  Div A vltg: V Div B vltg: V	ALARM
		VERIFY RAISE VERIFY RECORD RECORD VERIFY	Peer 17 is in Controlled Access  Current value (~ 4.1mA) for Alarm Response at MCR Response at MCR is Current value Div A vltg: V Div B vltg: V  Fan 8XEF1 is	ALARM  ~ 2.0V  ON
		VERIFY RAISE VERIFY RECORD RECORD VERIFY VERIFY	Peer 17 is in Controlled Access  Current value (~ 4.1mA) for Alarm Response at MCR Response at MCR is Current value Div A vltg: V Div B vltg: V  Fan 8XEF1 is Fan 8XSF1 is	ALARM — mA ~ 2.0V  ON ON
		VERIFY RAISE VERIFY RECORD RECORD VERIFY	Peer 17 is in Controlled Access  Current value (~ 4.1mA) for Alarm Response at MCR Response at MCR is Current value Div A vltg: V Div B vltg: V  Fan 8XEF1 is	ALARM  ~ 2.0V  ON
		RAISE VERIFY RECORD RECORD VERIFY VERIFY VERIFY	Peer 17 is in Controlled Access  Current value (~ 4.1mA) for Alarm Response at MCR Response at MCR is Current value Div A vltg: V Div B vltg: V  Fan 8XEF1 is Fan 8XSF1 is Evac & Exp alarm	ALARM  — mA  ~ 2.0V  ON ON ON
		VERIFY RAISE VERIFY RECORD RECORD VERIFY VERIFY VERIFY VERIFY LOWER	Peer 17 is in Controlled Access  Current value (~ 4.1mA) for Alarm Response at MCR Response at MCR is Current value Div A vltg: V Div B vltg: V  Fan 8XEF1 is Fan 8XSF1 is Evac & Exp alarm Peer 17 is in Safe Mode  Current value for ~ 1.0 V output for Div A & B	ALARM ————————————————————————————————————
		RAISE VERIFY RECORD RECORD VERIFY VERIFY VERIFY VERIFY LOWER VERIFY	Peer 17 is in Controlled Access  Current value (~ 4.1mA) for Alarm Response at MCR Response at MCR is Current value Div A vltg: V Div B vltg: V  Fan 8XEF1 is Fan 8XSF1 is Evac & Exp alarm Peer 17 is in Safe Mode	ALARM — mA ~ 2.0V  ON ON ON MODE 2
		VERIFY RAISE VERIFY RECORD RECORD VERIFY VERIFY VERIFY VERIFY LOWER	Peer 17 is in Controlled Access  Current value (~ 4.1mA) for Alarm Response at MCR Response at MCR is Current value Div A vltg: V Div B vltg: V  Fan 8XEF1 is Fan 8XSF1 is Evac & Exp alarm Peer 17 is in Safe Mode  Current value for ~ 1.0 V output for Div A & B  Fan 8XEF1 is	ALARM ————————————————————————————————————
		RAISE VERIFY RECORD RECORD VERIFY VERIFY VERIFY VERIFY LOWER VERIFY	Peer 17 is in Controlled Access  Current value (~ 4.1mA) for Alarm Response at MCR Response at MCR is Current value Div A vltg: V Div B vltg: V  Fan 8XEF1 is Fan 8XSF1 is Evac & Exp alarm Peer 17 is in Safe Mode  Current value for ~ 1.0 V output for Div A & B  Fan 8XEF1 is Fan 8XEF1 is Fan 8XEF1 is	ALARM — mA ~ 2.0V  ON ON ON MODE 2  OFF
		RAISE VERIFY RECORD RECORD VERIFY VERIFY VERIFY LOWER VERIFY VERIFY VERIFY VERIFY	Current value (~ 4.1mA) for Alarm Response at MCR Response at MCR is Current value Div A vltg: V Div B vltg: V  Fan 8XEF1 is Fan 8XSF1 is Evac & Exp alarm Peer 17 is in Safe Mode  Current value for ~ 1.0 V output for Div A & B  Fan 8XSF1 is Fan 8XSF1 is Fan 8XEF1 is Fan 8XEF1 is Fan 8XEF1 is Fan 8XEF1 is Fan 8XSF1 is	ALARM — mA ~ 2.0V  ON ON ON MODE 2  OFF

Current Source Test of Central Gas Detector 8XGS2 in PHENIX in Mode 17

Mode 16

1.10		Current Sou	rce Test of Central Gas Detector 8XGS2 in PHENIX in Mode	2
		PLACE	Peer 17 in Mode 17	
		VERIFY	Peer 17 is in Safe Access	MODE 2
		RAISE	Current value (~ 4.1mA) for Alarm Response at MCR	
		VERIFY	Response at MCR is	ALARM
		RECORD	Current value	mA
		RECORD	Div <b>A</b> vltg: V Div <b>B</b> vltg: V	~ 2.0V
		VERIFY	Fan 8XEF1 is	ON
		VERIFY	Fan <b>8XSF1</b> is	ON
		VERIFY	Evac & Exp alarm	ON
		VERIFY	Peer 17 remains in Safe Mode	MODE 2
		LOWER	Current value for $\sim 1.0~V$ output for Div A & B	
		VERIFY	Fan 8XEF1 is	OFF
		VERIFY	Fan <b>8XSF1</b> is	OFF
		VERIFY	Evac & Exp alarm	OFF
		RESET	Alarm at MCR	
		VERIFY	MCR sees 8XGS2 is	SAFE
1.11	Cur	rent Source T	Test of PHENIX Central Gas Detector, 8XGS2, in Mode 24 and	Bad Sensor Check
		PLACE	Peer 17 in Mode 24	
		VERIFY	Peer 17 is in No Access	MODE 24
		RAISE	Current value (~ 4.1mA) for Alarm Response at MCR	
		VERIFY	Response at MCR is	ALARM
		RECORD	Current value	mA
		RECORD	Div <b>A</b> vltg: V Div <b>B</b> vltg: V	$\sim 2.0 \mathrm{V}$
		VERIFY	Fan 8XEF1 is	ON
		VERIFY	Fan <b>8XSF1</b> is	ON
		VERIFY	Evac & Exp alarm	ON
		VERIFY	Peer 17 remains in No Access	MODE 24
		LOWER	Current value for $\sim 1.0~V$ output for Div A & B	
		VERIFY	Fan 8XEF1 is	OFF
		VERIFY	Fan 8XSF1 is	OFF
		VERIFY	Evac & Exp alarm	OFF
		RESET	Alarm at MCR	
		VERIFY	MCR sees 8XGS2 as	SAFE

	REVERSE	<b>Current Source connections</b>	
	RAISE VERIFY RECORD RECORD	Current value (~ 1.1mA) for <b>Bad Sensor</b> response at <b>MCR</b> Response at <b>MCR</b> is Current value Div <b>A</b> vltg: V Div <b>B</b> vltg: V	BAD SENSOR $\frac{mA}{\sim 0.725 V}$
	VERIFY	Evac & Exp alarm	ON
	RAISE RECORD RECORD	Current value (~ 0 mA) for ~ 1V output Current value Div A vltg: V Div B vltg: V	${\sim 1.0 \mathrm{V}}$ mA
	VERIFY	Evac & Exp alarm	OFF
	RESET VERIFY	Bad Sensor at MCR MCR sees 8XGS2 is	SAFE
	ck for accepta Sensor Check	nce of Current Source test of PHENIX Central Gas detector 8XGS2	in Mode 24 and
1.12	Gas Activation	on test of PHENIX Central Gas Detector, 8XGS2, in Mode 8	
	PLACE VERIFY	Peer 17 in Mode 8 Peer 17 is in Restricted Access	MODE 8
	DISCONN VERIFY SPRAY RECORD	Current Source Current Source is 50% L.E.L. gas on 8XGS2 (~2 mins reaction) Trip Level: Div A vltg: V Div B vltg: V	DISCONNECTED
	VERIFY VERIFY VERIFY VERIFY	Fan 8XEF1 is Fan 8XSF1 is Evac & Exp alarm MCR sees Peer 17 is in Safe Mode	ON ON ON MODE 2
	ALLOW RECORD	50% L.E.L. gas dissipation (~ 2 mins)  Quiescent Vltg: Div A vltg: V Div B vltg: V	
	VERIFY VERIFY VERIFY	Fan 8XEF1 is Fan 8XSF1 is Evac & Exp alarm	OFF OFF OFF
	RESET	Alarm at MCR	G A PP
	VERIFY DISCONN	MCR sees 8XGS2 as Voltmeter	SAFE

Check for acceptance of Gas Activation test of PHENIX Central Gas detector 8XGS2 in Mode 8

1.13	Current Sou	rce Test of PHENIX South Gas Detector, 8XGS3, in Mode 8	
	CONN CONN CONN	Voltmeter to <b>Div A:</b> Mod 11 Input 6, <b>1008B</b> Voltmeter to <b>Div B:</b> Mod 6 Input 3, <b>1008B</b> Current Srce to <b>Tp 3(+), Tp 4(-)</b> 8XGS3 <b>pcb</b> in Div <b>B</b> cab <b>1008B</b>	
	PLACE VERIFY	Peer 17 in Mode 8 Peer 17 is in Restricted Access	MODE 8
	RAISE VERIFY RECORD RECORD	Current value (~ 1.7 mA) for Level 1 response at MCR Response at MCR is Current value Div A vltg: V Div B vltg: V	LEVEL 1 mA ~1.4V
	RAISE VERIFY RECORD RECORD	Current value (~ 2.5 mA) for Level 2 response at MCR Response at MCR is Current value Div A vltg: V Div B vltg: V	LEVEL 2 mA ~1.6V
	RAISE VERIFY RECORD RECORD	Current value (~ 4.1mA) for Alarm response at MCR Response at MCR is Current value Div A vltg: V Div B vltg: V	$\frac{ALARM}{\sim 2.0V} mA$
	VERIFY VERIFY VERIFY	Fan 8XEF1 is Fan 8XSF1 is Evac & Exp alarm Peer 17 is in Safe Mode	ON ON ON MODE 2
	LOWER VERIFY LOWER VERIFY	Current value for $\sim$ 1.6 V output for Div A & B Attempt to reset Alarm at MCR Current value for $\sim$ 1.4 V output for Div A & B Attempt to reset Alarm at MCR	FAIL SUCCESSFUL
	VERIFY VERIFY VERIFY	Fan 8XEF1 is Fan 8XSF1 is Evac & Exp alarm	OFF OFF OFF
	LOWER RESET	Current value for $\sim 1.0~V$ output for Div $A~\&~B$ Alarm at $MCR$	
	VERIFY	MCR sees 8XGS3 as	SAFE

<sup>☐</sup> Check acceptance of Current Source test of PHENIX South Gas detector, 8XGS3, in Mode 8

	PLACE	Peer 17 in Mode 17	
	VERIFY	Peer 17 is in Restricted Access	MODE 17
	RAISE	Current value (~ <b>4.1</b> mA) for <b>Alarm</b> Response at <b>MCR</b>	
	VERIFY	Response at MCR is	ALARM
	RECORD	Current value	mA
	RECORD	Div A vltg:V Div B vltg:V	~ 2.0V
	VERIFY	Fan 8XEF1 is	ON
	VERIFY	Fan 8XSF1 is	ON
	VERIFY	Evac & Exp alarm	ON
	VERIFY	Peer 17 is in Safe Mode	MODE 2
	LOWER	Current value for $\sim 1.0~V$ output for Div A & B	
	VERIFY	Fan 8XEF1 is	OFF
	VERIFY	Fan 8XSF1 is	OFF
	VERIFY	Evac & Exp alarm	OFF
	RESET	Alarm at MCR	
	VERIFY	MCR sees 8XGS3 as	SAFE
1.15	Mode 17 Current Sou	arce Test of South Gas Detector 8XGS3 in PHENIX in Mode 1	6
	PLACE	Peer 17 in Mode 16	
	VERIFY	Peer 17 is in Controlled Access	
			MODE 16
	RAISE	Current value (~ <b>4.1</b> mA) for <b>Alarm</b> Response at <b>MCR</b>	
	VERIFY	Response at MCR is	MODE 16 ALARM
	VERIFY RECORD	Response at MCR is Current value	ALARM mA
	VERIFY	Response at MCR is	ALARM
	VERIFY RECORD	Response at MCR is Current value Div A vltg: V Div B vltg: V  Fan 8XEF1 is	ALARM  ~ 2.0V  ON
	VERIFY RECORD RECORD VERIFY VERIFY	Response at MCR is Current value Div A vltg: V Div B vltg: V  Fan 8XEF1 is Fan 8XSF1 is	ALARM
	VERIFY RECORD RECORD VERIFY VERIFY VERIFY	Response at MCR is Current value Div A vltg: V Div B vltg: V  Fan 8XEF1 is Fan 8XSF1 is Evac & Exp alarm	ALARM  — mA  ~ 2.0V  ON  ON  ON  ON
	VERIFY RECORD RECORD VERIFY VERIFY	Response at MCR is Current value Div A vltg: V Div B vltg: V  Fan 8XEF1 is Fan 8XSF1 is	ALARM
	VERIFY RECORD RECORD VERIFY VERIFY VERIFY	Response at MCR is Current value Div A vltg: V Div B vltg: V  Fan 8XEF1 is Fan 8XSF1 is Evac & Exp alarm	ALARM  — mA  ~ 2.0V  ON  ON  ON  ON
	VERIFY RECORD RECORD VERIFY VERIFY VERIFY LOWER VERIFY	Response at MCR is Current value Div A vltg: V Div B vltg: V  Fan 8XEF1 is Fan 8XSF1 is Evac & Exp alarm Peer 17 is in Safe Mode  Current value for ~ 1.0 V output for Div A & B  Fan 8XEF1 is	ALARM  — mA  ~ 2.0V  ON ON ON MODE 2
	VERIFY RECORD RECORD  VERIFY VERIFY VERIFY LOWER  VERIFY VERIFY	Response at MCR is Current value Div A vltg: V Div B vltg: V  Fan 8XEF1 is Fan 8XSF1 is Evac & Exp alarm Peer 17 is in Safe Mode  Current value for ~ 1.0 V output for Div A & B  Fan 8XEF1 is Fan 8XSF1 is	ALARM  — mA  ~ 2.0V  ON  ON  ON  MODE 2  OFF  OFF
	VERIFY RECORD RECORD VERIFY VERIFY VERIFY LOWER VERIFY	Response at MCR is Current value Div A vltg: V Div B vltg: V  Fan 8XEF1 is Fan 8XSF1 is Evac & Exp alarm Peer 17 is in Safe Mode  Current value for ~ 1.0 V output for Div A & B  Fan 8XEF1 is	ALARM  — mA  ~ 2.0V  ON ON ON MODE 2
	VERIFY RECORD RECORD  VERIFY VERIFY VERIFY LOWER  VERIFY VERIFY	Response at MCR is Current value Div A vltg: V Div B vltg: V  Fan 8XEF1 is Fan 8XSF1 is Evac & Exp alarm Peer 17 is in Safe Mode  Current value for ~ 1.0 V output for Div A & B  Fan 8XEF1 is Fan 8XSF1 is	ALARM  — mA  ~ 2.0V  ON  ON  ON  MODE 2  OFF  OFF
	VERIFY RECORD RECORD VERIFY VERIFY VERIFY LOWER VERIFY VERIFY VERIFY	Response at MCR is Current value Div A vltg: V Div B vltg: V  Fan 8XEF1 is Fan 8XSF1 is Evac & Exp alarm Peer 17 is in Safe Mode  Current value for ~ 1.0 V output for Div A & B  Fan 8XEF1 is Fan 8XSF1 is Fan 8XSF1 is Evac & Exp alarm	ALARM  — mA  ~ 2.0V  ON  ON  ON  MODE 2  OFF  OFF

Current Source Test of South Gas Detector 8XGS3 in PHENIX in Mode 17

Mode 16

1.16		Current Soi	irce Test of South Gas Detector 8XG83 in PHENIX in Mode	2
		PLACE	Peer 17 in Mode 17	
		VERIFY	Peer 17 is in Safe Access	MODE 2
		RAISE	Current value (~ 4.1mA) for Alarm Response at MCR	
		VERIFY	Response at MCR is	<b>ALARM</b>
		RECORD	Current value	mA
		RECORD	Div <b>A</b> vltg: V Div <b>B</b> vltg: V	~ 2.0V
		VERIFY	Fan <b>8XEF1</b> is	ON
		VERIFY	Fan 8XSF1 is	ON
		VERIFY	Evac & Exp alarm	ON
		VERIFY	Peer 17 remains in Safe Mode	MODE 2
		LOWER	Current value for $\sim 1.0~V$ output for Div A & B	
		VERIFY	Fan <b>8XEF1</b> is	OFF
		VERIFY	Fan 8XSF1 is	OFF
		VERIFY	Evac & Exp alarm	OFF
		RESET	Alarm at MCR	
		VERIFY	MCR sees 8XGS3 is	SAFE
1.17	Cur	rent Source T	Test of PHENIX South Gas Detector, 8XGS3, in Mode 24 and	Bad Sensor Check
		PLACE	Peer 17 in Mode 24	
		VERIFY	Peer 17 is in No Access	MODE 24
		RAISE	Current value (~ 4.1mA) for Alarm Response at MCR	
		VERIFY	Response at MCR is	ALARM
		RECORD	Current value	mA
		RECORD	Div A vltg: V Div B vltg: V	~ 2.0V
		VERIFY	Fan <b>8XEF1</b> is	ON
		VERIFY	Fan 8XSF1 is	ON
		VERIFY	Evac & Exp alarm	ON
		VERIFY	Peer 17 remains in No Access	MODE 24
		LOWER	Current value for $\sim 1.0~V$ output for Div A & B	
		VERIFY	Fan <b>8XEF1</b> is	OFF
		VERIFY	Fan 8XSF1 is	OFF
		VERIFY	Evac & Exp alarm	OFF
		RESET	Alarm at MCR	
		VERIFY	MCR sees 8XGS3 is	SAFE

		REVERSE	<b>Current Source connections</b>	
		RAISE VERIFY RECORD RECORD	Current value (~ 1.1mA) for <b>Bad Sensor</b> response at <b>MCR</b> Response at <b>MCR</b> is Current value Div <b>A</b> vltg: V Div <b>B</b> vltg: V	BAD SENSOR mA ~0.725V
		VERIFY	Evac & Exp alarm	ON
		RAISE RECORD RECORD	Current value ( $\sim 0$ mA) for $\sim 1V$ output Current value Div A vltg: V Div B vltg: V	${\sim 1.0 \text{V}}$ mA
		VERIFY	Evac & Exp alarm	OFF
		RESET VERIFY	Bad Sensor at MCR MCR sees 8XGS3 is	SAFE
		ck for accepta Sensor Check	ance of Current Source test of PHENIX South Gas detector 8XGS3 in	Mode 24 and
1.18		Gas Activation	on test of PHENIX South Gas Detector, 8XGS3, in Mode 8  Peer 17 in Mode 8	
		VERIFY	Peer 17 is in Restricted Access	MODE 8
		DISCONN SPRAY RECORD	Current Source 50% L.E.L. gas on 8XGS3 (~2 mins reaction) Trip Level: Div A vltg: V Div B vltg: V	
		VERIFY VERIFY VERIFY VERIFY	Fan 8XEF1 is Fan 8XSF1 is Evac & Exp alarm MCR sees Peer 17 is in Safe Mode	ON ON ON MODE 2
		ALLOW RECORD	50% L.E.L. gas dissipation (~ 2 mins)  Quiescent Vltg: Div A vltg: V Div B vltg: V	
		VERIFY VERIFY VERIFY	Fan 8XEF1 is Fan 8XSF1 is Evac & Exp alarm	OFF OFF
		RESET	Alarm at MCR	
		VERIFY DISCONN	MCR sees 8XGS3 as Voltmeter	SAFE
	Ch	eck for accept	ance of Gas Activation test of PHENIX South Gas detector 8XGS3	in Mode 8

1.19		Test of PHENIX Gas Detector 8XGS4 in Mode 8 – Div A, simulated output only		
		PLACE	Peer 17 in Mode 8	
		VERIFY	Peer 17 is in Restricted Access	MODE 8
		CONN	Jumper across Terms 11&12, PHENIX Iface Block I/O Div	A
		VERIFY	Fan 8XEF1 is	ON
		VERIFY	Fan <b>8XSF1</b> is	ON
		VERIFY	Evac & Exp alarm	ON
		VERIFY	MCR sees Peer 17 in Safe Mode	MODE 2
		DISCONN	Jumper across Terms 11&12, PHENIX Iface Block I/O Div	A
		VERIFY	Fan <b>8XEF1</b> is	OFF
		VERIFY	Fan <b>8XSF1</b> is	OFF
		VERIFY	Evac & Exp alarm	OFF
		RESET	Alarm at MCR	
		VERIFY	MCR sees 8XGS3 is	SAFE
	heck	-	ce of test of PHENIX Gas detector 8XGS4 in Mode 8 – Div A	•
	heck	Test of PHE	ENIX Gas Detector 8XGS4 in Mode 8 – Div B, simulated outp	•
		Test of PHE	ENIX Gas Detector 8XGS4 in Mode 8 – Div B, simulated outp Peer 17 in Mode 8	out only
	heck	Test of PHE	ENIX Gas Detector 8XGS4 in Mode 8 – Div B, simulated outp	•
		Test of PHE	ENIX Gas Detector 8XGS4 in Mode 8 – Div B, simulated outp Peer 17 in Mode 8	out only  MODE 8
		Test of PHE PLACE VERIFY	ENIX Gas Detector 8XGS4 in Mode 8 – Div B, simulated outp  Peer 17 in Mode 8  Peer 17 is in Restricted Access  Jumper across Terms 11&12, PHENIX Iface Block I/O Div Fan 8XEF1 is	out only  MODE 8  B  ON
□ C		Test of PHE PLACE VERIFY CONN VERIFY VERIFY	Peer 17 in Mode 8 Peer 17 is in Restricted Access  Jumper across Terms 11&12, PHENIX Iface Block I/O Div Fan 8XEF1 is Fan 8XSF1 is	MODE 8  B  ON ON
		Test of PHE PLACE VERIFY CONN VERIFY VERIFY VERIFY	Peer 17 in Mode 8 Peer 17 is in Restricted Access  Jumper across Terms 11&12, PHENIX Iface Block I/O Div Fan 8XEF1 is Fan 8XSF1 is Evac & Exp alarm	MODE 8  B  ON ON ON
		Test of PHE PLACE VERIFY CONN VERIFY VERIFY	Peer 17 in Mode 8 Peer 17 is in Restricted Access  Jumper across Terms 11&12, PHENIX Iface Block I/O Div Fan 8XEF1 is Fan 8XSF1 is	MODE 8  B  ON ON
		Test of PHE PLACE VERIFY CONN VERIFY VERIFY VERIFY	Peer 17 in Mode 8 Peer 17 is in Restricted Access  Jumper across Terms 11&12, PHENIX Iface Block I/O Div Fan 8XEF1 is Fan 8XSF1 is Evac & Exp alarm	MODE 8  B  ON ON ON MODE 2
		Test of PHE PLACE VERIFY CONN VERIFY VERIFY VERIFY VERIFY	Peer 17 in Mode 8 Peer 17 is in Restricted Access  Jumper across Terms 11&12, PHENIX Iface Block I/O Div Fan 8XEF1 is Fan 8XSF1 is Evac & Exp alarm MCR sees Peer 17 in Safe Mode  Jumper across Terms 11&12, PHENIX Iface Block I/O Div Fan 8XEF1 is	MODE 8  B  ON ON ON MODE 2
		Test of PHE PLACE VERIFY CONN VERIFY VERIFY VERIFY VERIFY DISCONN	Peer 17 in Mode 8 Peer 17 is in Restricted Access  Jumper across Terms 11&12, PHENIX Iface Block I/O Div Fan 8XEF1 is Fan 8XSF1 is Evac & Exp alarm MCR sees Peer 17 in Safe Mode  Jumper across Terms 11&12, PHENIX Iface Block I/O Div	MODE 8  B  ON ON ON MODE 2
		Test of PHE PLACE VERIFY CONN VERIFY VERIFY VERIFY VERIFY DISCONN VERIFY	Peer 17 in Mode 8 Peer 17 is in Restricted Access  Jumper across Terms 11&12, PHENIX Iface Block I/O Div Fan 8XEF1 is Fan 8XSF1 is Evac & Exp alarm MCR sees Peer 17 in Safe Mode  Jumper across Terms 11&12, PHENIX Iface Block I/O Div Fan 8XEF1 is	MODE 8  B  ON ON ON MODE 2  B  OFF
		Test of PHE PLACE VERIFY CONN VERIFY VERIFY VERIFY VERIFY DISCONN VERIFY VERIFY	Peer 17 in Mode 8 Peer 17 is in Restricted Access  Jumper across Terms 11&12, PHENIX Iface Block I/O Div Fan 8XEF1 is Fan 8XSF1 is Evac & Exp alarm MCR sees Peer 17 in Safe Mode  Jumper across Terms 11&12, PHENIX Iface Block I/O Div Fan 8XEF1 is	MODE 8  B  ON ON ON MODE 2  B  OFF

1.21	Test of PHENIX Gas Detector 8XGS4 in Mode 17 – Divs A&B, simulated output only		
	PLACE VERIFY	Peer 17 in Mode 17 Peer 17 is in Restricted Access	MODE 17
	CONN CONN	Jumper across <b>Terms 11&amp;12</b> , PHENIX Iface <b>Block I/O Div A</b> Jumper across <b>Terms 11&amp;12</b> , PHENIX Iface <b>Block I/O Div B</b>	
	VERIFY VERIFY VERIFY	Fan 8XEF1 is Fan 8XSF1 is Evac & Exp alarm	ON ON ON
	VERIFY	MCR sees Peer 17 in Safe Mode	MODE 2
	DISCONN DISCONN	Jumper across <b>Terms 11&amp;12</b> , PHENIX Iface <b>Block I/O Div A</b> Jumper across <b>Terms 11&amp;12</b> , PHENIX Iface <b>Block I/O Div B</b>	
	VERIFY	Fan 8XEF1 is	OFF
	VERIFY	Fan 8XSF1 is	OFF
	VERIFY	Evac & Exp alarm	OFF
	RESET	Alarm at MCR	
	VERIFY	MCR sees 8XGS4 is	SAFE
	it only	ce of test of PHENIX Gas detector 8XGS4 in Mode 17 – Divs A&B, s	
	PLACE	Peer 17 in Mode 16	
	VERIFY	Peer 17 is in Controlled Access	MODE 16
	CONN CONN	Jumper across <b>Terms 11&amp;12</b> , PHENIX Iface <b>Block I/O Div A</b> Jumper across <b>Terms 11&amp;12</b> , PHENIX Iface <b>Block I/O Div B</b>	
	VERIFY	Fan 8XEF1 is	ON
	VERIFY	Fan <b>8XSF1</b> is	ON
	VERIFY	Evac & Exp alarm	ON
	VERIFY	MCR sees Peer 17 in Safe Mode	MODE 2
	DISCONN DISCONN	Jumper across <b>Terms 11&amp;12</b> , PHENIX Iface <b>Block I/O Div A</b> Jumper across <b>Terms 11&amp;12</b> , PHENIX Iface <b>Block I/O Div B</b>	
	VERIFY	Fan 8XEF1 is	OFF
	VERIFY	Fan 8XSF1 is	OFF
	VERIFY	Evac & Exp alarm	OFF
	RESET	Alarm at MCR	
	VERIFY	MCR sees 8XGS4 is	SAFE
	for acceptance	ce of test of PHENIX Gas detector 8XGS4 in Mode 16 – Divs A&B, s	simulated

1.23		Test of PHENIX Gas Detector 8XGS4 in Mode 2 – Divs A&B, simulated output only		
		PLACE VERIFY	Peer 17 in Mode 2 Peer 17 is in Safe Mode	MODE 2
		CONN CONN	Jumper across <b>Terms 11&amp;12</b> , PHENIX Iface <b>Block I/O Div A</b> Jumper across <b>Terms 11&amp;12</b> , PHENIX Iface <b>Block I/O Div B</b>	
		VERIFY	Fan <b>8XEF1</b> is	ON
		VERIFY	Fan <b>8XSF1</b> is	ON
		VERIFY	Evac & Exp alarm	ON
		VERIFY	MCR sees Peer 17 remain in Safe Mode	MODE 2
		DISCONN DISCONN	Jumper across <b>Terms 11&amp;12</b> , PHENIX Iface <b>Block I/O Div A</b> Jumper across <b>Terms 11&amp;12</b> , PHENIX Iface <b>Block I/O Div B</b>	
		VERIFY	Fan <b>8XEF1</b> is	OFF
		VERIFY	Fan <b>8XSF1</b> is	OFF
		VERIFY	Evac & Exp alarm	OFF
		RESET	Alarm at MCR	
		VERIFY	MCR sees 8XGS4 is	SAFE
1.24		Test of PHE	NIX Gas Detector 8XGS4 in Mode 24 – Divs A&B, simulated outpu	t only
		PLACE	Peer 17 in Mode 24	
		VERIFY	Peer 17 is in No Access	MODE 24
		CONN CONN	Jumper across <b>Terms 11&amp;12</b> , PHENIX Iface <b>Block I/O Div A</b> Jumper across <b>Terms 11&amp;12</b> , PHENIX Iface <b>Block I/O Div B</b>	
		VERIFY	Fan <b>8XEF1</b> is	ON
		VERIFY	Fan <b>8XSF1</b> is	ON
		VERIFY	Evac & Exp alarm	ON
		VERIFY	MCR sees Peer 17 remain in	MODE 24
		DISCONN DISCONN	Jumper across <b>Terms 11&amp;12</b> , PHENIX Iface <b>Block I/O Div A</b> Jumper across <b>Terms 11&amp;12</b> , PHENIX Iface <b>Block I/O Div B</b>	
		VERIFY	Fan <b>8XEF1</b> is	OFF
		VERIFY	Fan <b>8XSF1</b> is	OFF
		VERIFY	Evac & Exp alarm	OFF
		RESET	Alarm at MCR	
		VERIFY	MCR sees 8XGS4 is	SAFE
	heck	for accentance	re of test of PHENIX Gas detector 8XGS4 in Mode 24 – Divs A&R-s	imulated

output only

1.25	Gas Activation test of PHENIX Gas- House Gas Detector, 8XGS5, in Mode 8				
		PLACE VERIFY	Peer 17 in Mode 8 Peer 17 is in Restricted Access	MODE 8	
		SPRAY	50% L.E.L. gas on 8XGS5 (~2 mins reaction)		
		VERIFY	LOCAL Evac & Exp alarm	ON	
		ALLOW VERIFY	50% L.E.L. gas <b>dissipation</b> (~ 2 mins) <b>LOCAL</b> Evac & Exp alarm	OFF	
	Che	eck for accepta	nce of Gas Activation test of PHENIX Gas-House Gas detector 8XGS	S5 in Mode 8	
			END OF TEST PROCEDURE		
TTL:		n for completio	n of initial testing:	_	
TTL:		n for completio	n of final testing:		